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## (54) Improvements in or relating to a fan assembly

(57) In an extractor fan assembly, after a front cover 3 has been removed, an impeller 35 may be removed from a rotatable motor housing 32 which is connected to a main body member 1 which is permanently mounted on a window or the like. Thus cleaning of the extractor fan assembly is facilitated since only very light components, namely the front cover 3 and the impeller 35 need to be removed, and whilst these portions may be washed in a bowl of water, the remaining elements of the extractor fan assembly can readily be cleaned *in situ*. The assembly may also include a removable rear cover 24.

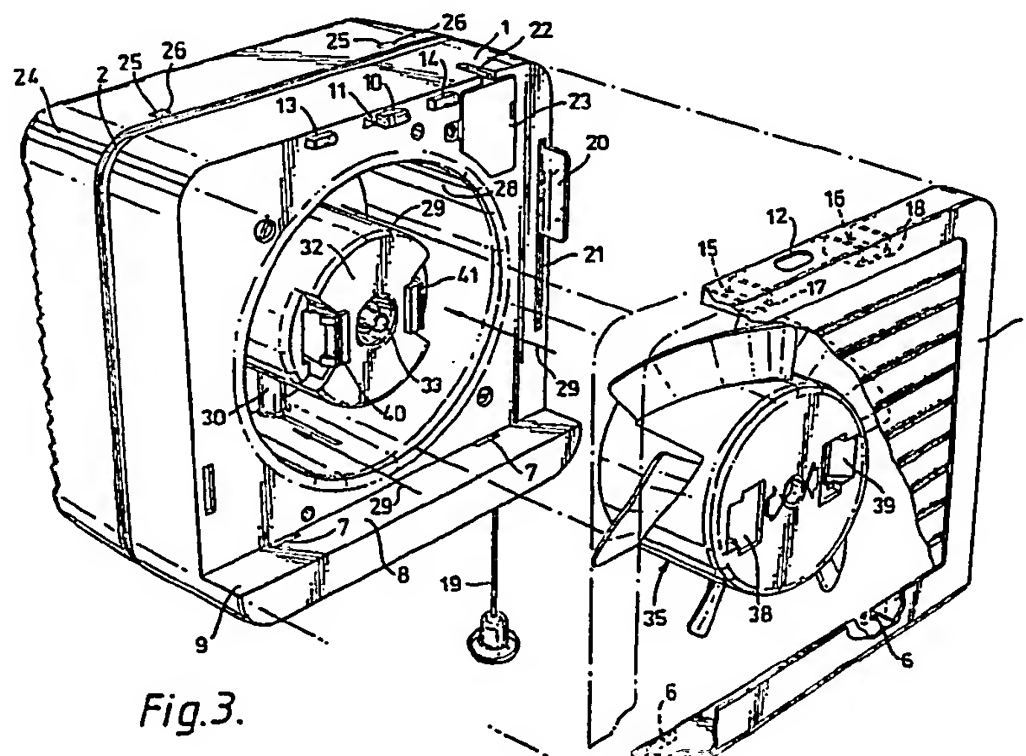
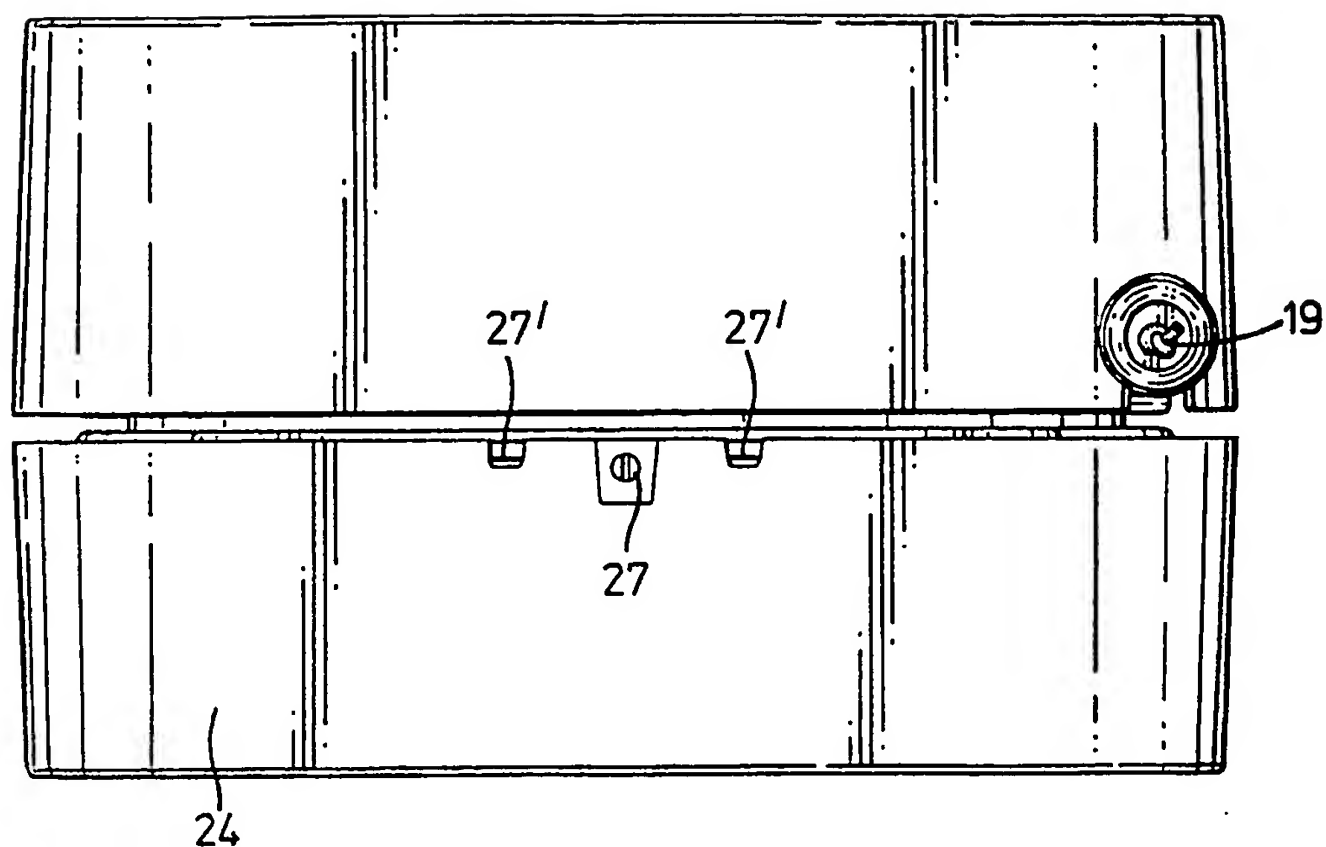
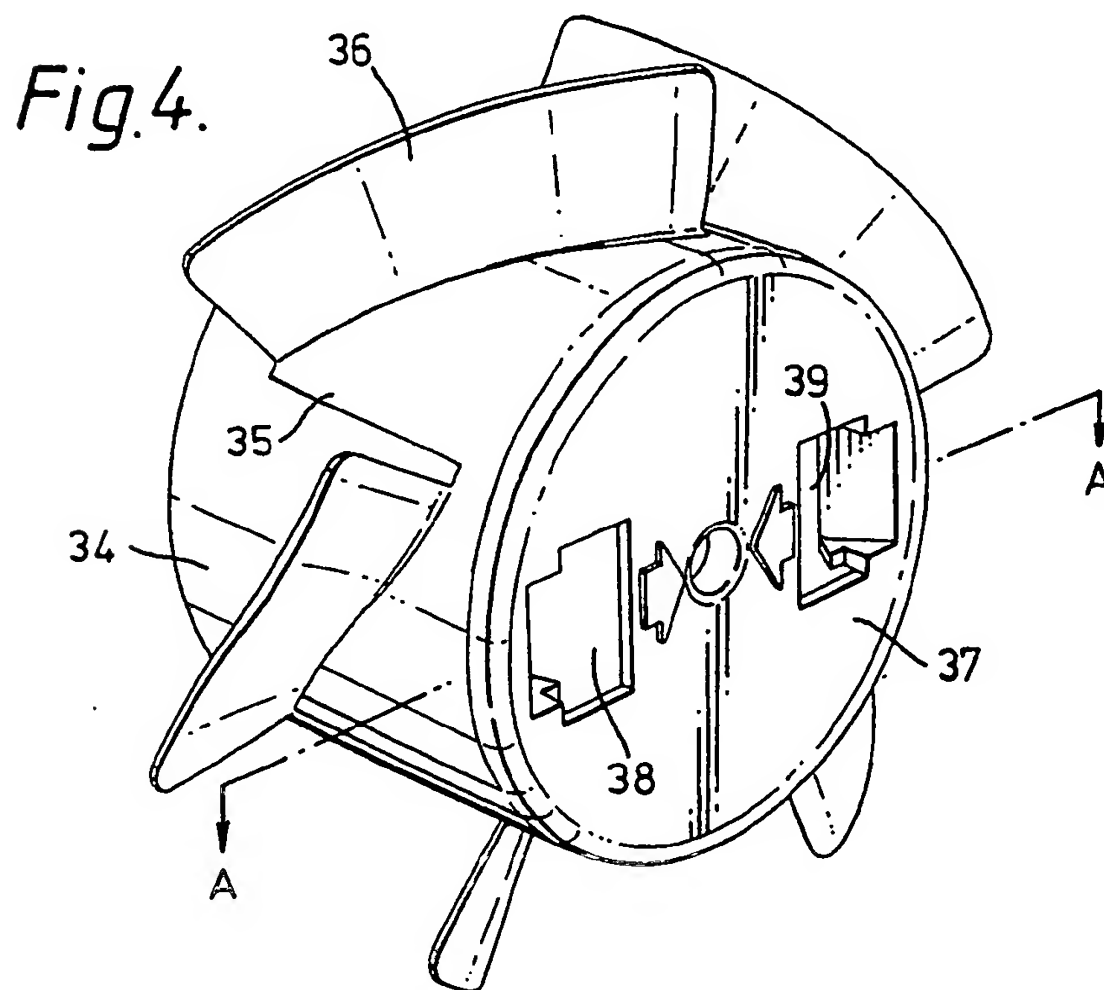


Fig. 3.

The drawing(s) originally filed was (were) informal and the print here reproduced is taken from a later filed formal copy.

*Fig. 2.**Fig. 4.*

## SPECIFICATION

## Improvements in or relating to a fan assembly

5 This invention relates to a fan assembly and more particularly relates to an electric fan assembly of the type usually known as an "extractor" fan.

Whilst, in this specification, reference will be made to an "extractor" fan it is to be appreciated that fans of the type under consideration can be used either to extract air from a space being ventilated or, alternatively, to inject air into the space being ventilated. Indeed, certain embodiments of "extractor" fan are provided with reversible motors so that they can both extract air from and inject air to a space to be ventilated.

Many types of extractor fan assembly have been proposed previously, and it is common practice for fan assemblies of this type to be mounted permanently in position on a window or in an opening formed in the wall of a building. However, parts of the assembly are removable to facilitate cleaning of the assembly.

It is to be noted that in the prior art arrangements, and in the present invention, part of the assembly is intended to be mounted relatively permanently on a window or in an opening formed in a wall of a building, in that, in normal use and cleaning and servicing of the fan assembly, the permanently mounted part is not intended to be removed from its position. In this specification parts of this type will be described as being "permanently" mounted in position. However, those parts of the fan assembly which are to be removed from the permanently mounted part of the assembly during cleaning or servicing operations, even if these components are removed after tools have been used, for example, to release nuts or screws or the like, will be termed as being "releasably" mounted in position.

In a typical prior art extractor fan, a mounting bracket is permanently mounted on a window or in an aperture formed in a wall. A main body portion of the extractor fan assembly is releasably mounted in position on the mounting bracket, for example by means of screws. The main body portion incorporates an electric motor. An impeller is mounted in position on the main body, to be driven by the motor and in certain circumstances the impeller is releasably mounted in position on the main body. Finally a removably mounted cover is often provided.

When it is desired to clean an extractor fan of this type, initially the removable cover (if provided) is removed from its position. The cover can then be washed. The main body must then be removed from the mounting bracket, for example by releasing the fixing screws. Since the main body contains the motor, the main body is relatively heavy. Also, if the main body is to be removed for cleaning, the lead that supplies electricity to the motor must be unplugged from the main body or disconnected from the main body in some other way. The impeller, if it is removable from the main body, must be removed from the main body for cleaning purposes.

Of course, in cleaning the main body care should be taken not to immerse the main body in water,

since otherwise damage may be done to the motor.

It is to be appreciated that it is a relatively time consuming task to clean an extractor fan assembly of the above described type, and also inexperienced people may be deterred from cleaning such extractor fan assemblies themselves in view of the need to disconnect the electric lead from the main body and also the need to unscrew the main body portion from the mounting bracket whilst still supporting the weight of the main body portion. Thus people who are in any way frail may find it very difficult to clean a typical extractor fan as found in the prior art, because they may not be able to support the weight of the main body portion whilst the main body portion is disconnected from the mounting bracket. This may particularly be the case if the extractor fan is mounted so that it is only accessible to a person standing on a chair, step ladder or the like.

The present invention seeks to provide an improved extractor fan assembly.

According to this invention there is provided an extractor fan assembly (as herein defined) comprising a main body portion adapted to be permanently mounted in position, said main body portion carrying a motor adapted to drive an impeller, and an impeller releasably mounted in position on the main body portion to be driven by said motor, so that the impeller may be selectively removed from the main body portion.

Preferably the motor is mounted axially in position in an air flow passage passing through the main body portion, and the impeller is releasably connected to the drive shaft of the motor.

Conveniently the motor is held in position by means of a fixed spider.

Advantageously the impeller comprises a tubular member adapted to surround the motor, impeller blades being provided which extend radially outwardly from the exterior of the tubular member.

Preferably the impeller is mounted in position by means of resilient fingers mounted on an element mounted on the motor drive shaft, which fingers releasably engage apertures formed in part of the impeller.

Conveniently the element carrying the resilient fingers comprises a rotatable motor housing constituting a protective cover for the motor.

Advantageously the fan is provided with a removable cover mounted on the main body member which must be removed before said impeller can be removed.

Preferably said cover is provided with a plurality of hingedly mounted slats, means being provided on the main body member for opening and closing said slats.

Conveniently the main body member is adapted to be mounted in position by means of a co-operating plate.

Advantageously said cooperating plate has, releasably mounted thereon, a cover member.

Preferably said plate defines one or more lugs insertable through a corresponding aperture or apertures in said cover to locate said cover, securing means being provided to secure the cover in position. The securing means may be a grub screw or the

ventilation effect. A subsequent pull of the drawcord will result in the slats being closed. This cycle of operation may then be repeated.

However, when an extractor fan as described above is to be cleaned, it will only be necessary for the person cleaning the extractor fan to press the tab 10 downwardly through the aperture 12 in the transverse member that forms the upper part of the frame of the front cover 3, and then pivot the front cover forwardly, subsequently lifting the front cover so that the lugs 6 are withdrawn from the apertures 7 in the upper surface 8 of the forwardly extending projection 9 on the main body member 1. The front cover is thus totally removed from the assembly and can be cleaned easily, for example by immersing the front cover in a bowl of water. The front cover is very light and is thus easily removed even by a person who is relatively frail, even if that person is standing on a chair, stepladder or the like.

The impeller may then readily be removed from the extractor fan assembly by pressing the resilient lugs inwardly and gently withdrawing the impeller 34. The impeller itself is very light and is thus easily removed, even by a person who is frail, even if that person is standing on a chair, stepladder or the like. The impeller can then be thoroughly cleaned, for example by totally immersing the impeller in a bowl of water. All the visible parts of the main body portion 1 may then be cleaned while the main body portion remains permanently mounted in position. The exterior of the motor housing 32 can be easily cleaned, and the portion of the main body member 1 that defines the air flow passage 28 can also readily be cleaned.

The motor housing 32 effectively covers the motor to prevent any moisture etc entering the motor during this cleaning procedure.

If necessary the rear cover 24 can be removed relatively easily, merely by removing the grub screw 29 and pivoting the rear cover 24 about the lugs 25 and then disengaging the lugs 25 from the apertures 26. Then access can be obtained to the rear part of the main body member 1 to permit a very thorough cleaning of the assembly to be carried out. Also the rear cover can be thoroughly cleaned, for example by immersing it in a bowl of water.

The assembly may be easily re-assembled by reversing the above-described procedure.

It is to be appreciated that an extractor fan assembly in accordance with the present invention can be safely cleaned without the necessity of making any electrical disconnection whatsoever, and also the assembly can be cleaned without having to remove the main body portion, which contains the motor, from its permanent position. Thus even a frail person may clean the extractor fan assembly, since there is no need to handle the relatively heavy main body portion that carries the motor - instead only very light components have to be removed from the permanently mounted part of the extractor fan assembly to permit a thorough cleaning of the entire assembly to be carried out.

Whilst the invention has been described with reference to an embodiment designed to be mounted permanently in position on a window it is to be apprecia-

ted that other embodiments of the invention may be designed to be mounted permanently in position in an opening formed in a wall of a building, or in other appropriate positions.

Whilst the invention has been described with reference to one specific embodiment many modifications may be effected without departing from the scope of the invention.

## 75 CLAIMS

1. An extractor fan assembly (as herein defined) comprising a main body portion adapted to be permanently mounted in position, said main body portion carrying a motor adapted to drive an impeller, and an impeller releasably mounted in position on the main body portion to be driven by said motor, so that the impeller may be selectively removed from the main body portion.
2. An extractor fan assembly according to claim 1 wherein the motor is mounted axially in position in an air flow passage passing through the main body portion, and the impeller is releasably connected to the drive shaft of the motor.
3. An extractor fan assembly according to claim 2 wherein the motor is held in position by means of a fixed spider.
4. An extractor fan assembly according to claim 2 or claim 3 wherein the impeller comprises a tubular member adapted to surround the motor, impeller blades being provided which extend radially outwardly from the exterior of the tubular member.
5. An extractor fan assembly according to any one of claims 2 to 4 wherein the impeller is mounted in position by means of resilient fingers mounted on an element mounted on the motor drive shaft, which fingers releasably engage apertures formed in part of the impeller.
6. An extractor fan assembly according to claim 5 wherein the element carrying the resilient fingers comprises a rotatable motor housing constituting a protective cover for the motor.
7. An extractor fan assembly according to any one of the preceding claims provided with a removable cover mounted on the main body member which must be removed before said impeller can be removed.
8. An extractor fan assembly according to claim 7 wherein said cover is provided with a plurality of hingedly mounted slats, means being provided on the main body member for opening and closing said slats.
9. An extractor fan assembly according to any one of the preceding claims wherein the main body member is adapted to be mounted in position by means of a co-operating plate.
10. An extractor fan assembly according to claim 9 wherein said co-operating plate has, releasably mounted thereon, a cover member.
11. An extractor fan assembly according to claim 10 wherein said plate defines one or more lugs insertable through a corresponding aperture or apertures in said cover to locate said cover, securing means being provided to secure the cover in position.